

WORKING DRAFT

October 19, 2012

REPORT OF THE SERVICE SYSTEM DATA AND STATISTICAL INFORMATION INTEGRATION WORKGROUP

I. INTRODUCTION

The Service System Data and Statistical Information Integration Workgroup (Data Workgroup) was established by SF 525, which began the process of redesigning Iowa's Mental Health and Disability Service (MHDS) system. This is the report of the Data Workgroup to Governor Branstad, the Joint Appropriations Subcommittee on Health and Human Services, and the Legislative Services Agency related to the data collection and reporting aspect of Redesign. This report is based on the activities outlined in SF 525 and SF 2315 that provide guidance for the Data Workgroup to examine these system aspects.

The legislation required the Data Workgroup to have representation from the Department of Human Services (DHS), the Department of Public Health (IDPH) and the Iowa State Association of Counties (ISAC), and other stakeholders. A complete membership list is included in Appendix B of this report. The report provides recommendations regarding the implementation provisions for an integrated data and statistical information system for mental health, disability services, and substance abuse services. These recommendations address the changes that will be required to ensure that the data collection and reporting system utilized within the MHDS system is as efficient and effective as possible.

II. METHODOLOGY

The workgroup met five times over a period of eight months. The meeting schedule is included in Appendix A of this report. All meetings were open to the public, and all agendas and relevant meeting materials were posted on the MHDS Redesign website prior to meeting (<http://www.dhs.state.ia.us/Partners/MHDSRedesign.html>).

The group spent much of the first meeting discussing the steps they thought necessary to examine the task at hand. The workgroup determined that it would be necessary for all members to have a basic knowledge of the different data systems that are used in the MHDS system. Workgroup members gave presentations over their respective data systems during the second meeting, and then the last three meetings centered on intense discussions over the factors the members determined would be necessary to address these changes.

Workgroup members have organized their recommendations to address specific changes within the data collection and reporting system they feel necessary in order to make the system as efficient and effective as possible. Recommendations are listed in the following section, and each recommendation is followed by a brief summary of the discussion that led to the decision.

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III. WORKGROUP RECOMMENDATIONS

- **Entities within the MHDS system will not be required to use the same operational/transactional system.**

Workgroup members acknowledge that there are many different entities within the MHDS system that gather, enter, report and utilize data. These entities vary from providers, Central Points of Coordination Administrators (CPCs), case managers, to funders. These entities have already invested time, money, and effort into developing data collection and management systems that work for their business purposes and role within the MHDS system. Accordingly so, these entities should not have to abandon their prior efforts to create effective data collection systems that work within their business setting for an entirely new data management system.

Instead of focusing efforts to redo the entire data management system, the workgroup members recommend that efforts focus on improving the ability of existing data collection, management, and reporting systems to share information more effectively. The workgroup members discussed two options for ways that data and information could be exchanged through this new system. One way is for information to be decentralized and exchanged between individual entities in the MHDS system. The other way is for information to be sent from each entity to a centralized data repository, which can then be accessed by other entities if they have the appropriate security clearance.

Workgroup members recommend that information from entities in the MHDS system be sent to a centralized data repository. Several factors were discussed when making this recommendation. The common theme emerging from this discussion was that operational/transactional systems should not place any undue burden on entities within the MHDS system outside the normal course of business. Workgroup members feel that how you want to run your business should determine how you run your IT system; and an IT system should support the way your business accomplishes its end goal. Data entry and management should be a normal part of doing business, and not a separate task or burden. Workgroup members acknowledge that this type of data collection system will require all entities to transmit the information collected to a central data repository where it can be warehoused and accessed by other entities in the MHDS system. A more detailed conceptual framework describing this process is attached as Appendix C and summarized in the second Data Workgroup recommendation.

Workgroup members do realize that there may be benefits to moving entities to using a single system. Currently, there is no single system statewide that would meet this need. However, the workgroup feels that entities should be able to buy into an emerging system if the opportunity arises in the future.

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- **Operational/transactional systems need to have the capability to be linked and exchange information. This information needs to be labeled consistently and have the same definition.**

Many of the entities within the MHDS system collect similar if not the same information from consumers and family members. This leads to duplication of efforts on behalf of the providers and funders, and places increased burden on consumers, family members, and providers to furnish the necessary information. Providers and funders collect many different types of information, and it will be essential to identify which entity is the best source of this information in order to make the data collection process more streamlined and effective. The data collection system will be much more effective if it were possible to spread out data collection efforts across entities and then transmit the data to a centralized data repository where it can be stored and accessed by other entities. This type of system will allow entities in the MHDS system to maintain their focus on their normal course of business instead of diverting resources away from their normal course of business towards data collection and management. This process is illustrated in Figure 1 of Appendix C of this report and is outlined and explained below¹.

I. Data Landing Zone

- 1) Identify entities that have data we want to collect.
 - MHDS
 - Central Data Repository (IDPH)
 - Community Services Network (CSN)
 - Other County Data Collection Systems
 - State Facilities
 - Providers
 - Iowa Medicaid Enterprise (IME)
 - Magellan
 - Others (as identified)
- 2) Develop a unique client identifier that will allow the data warehouse to match data entered by different entities in the MHDS system to one client. This process is further detailed in the third workgroup recommendation.
- 3) Identify core and extended data elements that should be collected. This data should be collected from the entity with the most current/accurate data.
 - Core Data = Client Demographics
 - Extended Data = Services, Diagnoses, Payments, etc.
- 4) Determine the format of the data fields collected from entities. These need to be consistent across the MHDS system. Complications with the information linkage and exchange in the current MHDS system stem from the fact that information is not labeled consistently and

¹ This outline is based on the article: Meta Analytix. (2010). *Information Based Design- Next Generation Data Warehouses for Healthcare providers*. Jacksonville, FL: Majarwitz, J & Nair, K.

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therefore cannot be easily extracted and exchanged between entities. The workgroup recommends that information in the MHDS data exchange system must be consistent so that the data has the same meaning for each entity.

- 5) Load data into data warehouse. The workgroup recommends that the information in the MHDS data exchange system be sent to the central data warehouse on a monthly basis, at minimum. This will minimize the lag time for reporting information and will ensure that data is reported to the system in a timely manner. Workgroup members do acknowledge that this shorter time frame will require entities using the data to have some tolerance for potential changes to data, such as adjustments to claims.
- 6) Data cleansing and standardization should be performed as well as validation of data elements for quality assurance. (Check for duplicates)

II. Integrated Data Zone

- 1) Design the initial integrated data warehouse taking into account the data needed for the primary purposes of the data warehouse. Focus on the data elements required for reporting. Leave behind the extra data elements in the Data Landing Zone that have been sourced but do not have requirements held against them.
- 2) Run reports from this level or continue to the Data Usability Zone.

III. Data Usability Zone

- 1) Identify data marts. A data mart is a subset of the data that is accessed and used to support a specific purpose within the overall system.
 - 2) Determine how the data will be accessed and by whom. Establish privacy firewalls as necessary. This is further explained in the fourth workgroup recommendation.
 - 3) Considerations need to be made to performance, availability, security, and various other requirements.
- **The central data repository should match client information from different sources to the same client using a unique client identifier.**

Confidentiality concerning MHDS data is extremely important. Entities within the current MHDS system use client identifiers as a way to deidentify information and maintain client privacy and confidentiality when reporting information. Many of the entities in the MHDS system have developed a client identifier to use within their IT system. These client identifiers vary from a client's Medicaid State ID number to a client's Social Security Number. MHDS is required by Iowa Code §225C.6A.3b to use a client identifier made up of "...the last four digits of an individual's social security number, the first three letters of the individual's last name, the individual's date of birth, and the individual's gender in an order determined by the department."

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The current MHDS data reporting system does not have an efficient way to match deidentified client information from one entity with deidentified information from another entity. Many times the information must be reidentified and matched to an individual before it is combined with information from another entity. This process is labor intensive and uses valuable time and resources within the MHDS system.

Workgroup members recommend that the centralized data repository have a method of matching client data in a way that maintains client privacy. The workgroup examined the work surrounding the Iowa Health Information Network (IHIN) as a model for the MHDS system. IHIN will use a two-phase match process to match client information; this allows clients to be matched as their data is entered into the data collection system, and it allows for large-scale client matching across systems. During the IHIN data matching process, clients are initially matched across primary data fields. For the IHIN, the primary data fields are: family name, given name, date of birth and gender. If the information entered into the system meets a certain match threshold, the system will identify the information as a match with an already existing client. If the information entered does not meet this threshold, the system then utilizes the secondary data fields as a way to make a more precise match. The secondary data fields are: Social Security Number, Medicare number, drivers license number, postal code, phone numbers, email address, place of birth, mother's maiden name, death date (if relevant), and multiple birth order (if relevant). If the system is still not able to match this information with an already existing client, the information is then entered as a new client.

The workgroup members recommend that a similar, yet slightly modified, process be operationalized within the MHDS centralized data repository system. Workgroup members recommend that a client's full name and date of birth be used as primary data fields that all entities within the MHDS system should be required to collect from their clients. The majority of entities within the MHDS system already collect this information from clients; so requiring this information should not produce any undue burden. Workgroup members further recommend that the secondary data fields consist of the client Social Security Number, Medicaid State ID, phone number, and email address. Entities within the MHDS system are not consistent with whether or not they currently require this information to be collected from each client. In keeping consistent with the workgroup members' recommendation that the data collection system should not interrupt normal business practices, workgroup members recommend that entities should not be required to add these secondary data fields in their already existing data systems if the information is not already collected.

- **Privacy and security needs to be maintained consistent with defined roles and responsibilities.**

Information collected in the MHDS system can be warehoused so other entities are able to access certain pieces of the information from a central repository instead of having to collect it themselves. This repository will hold a vast amount of personal client information, and workgroup members

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recognize that not every individual who has access to the data repository will need to access all of the information collected.

It is possible to establish appropriate privacy screens by restricting access to information in accordance with the roles that entities play in a client's care. For example, information about a client seeking substance abuse services should not be accessed by a provider who is not seeing the client or who does not provide substance abuse services. This privacy screen will have to be established and monitored. The privacy screen can be established by programming restrictions on which entities can access information in the data system or by establishing data marts comprised of relevant types of treatment information.

- **Efforts shall be made to integrate the central data repository with other electronic data information exchange systems being implemented statewide.**

Currently in Iowa, the Ehealth council is building the Iowa Health Information Network (IHIN), with the purpose of making clinical information available between data systems. This network is overseen by IDPH and an executive council, consisting of membership from Wellmark, The University of Iowa, Mercy Hospitals, and a legislatively established board. The IHIN will use Direct Secure Messaging (DSM) as a way to directly transmit patient data between enrolled providers. This means that the data within this system is not centrally warehoused; rather it is stored peripherally in the data system from which it originated. The current focus of the IHIN is on ambulatory health care, but the Data Workgroup members feel that the system has not been designed in a way that would exclude the inclusion of data from the MHDS system.

Workgroup members want to stress the importance of potentially integrating the two systems in the future as a way to get an overall informational picture for all clients served in the state. There are several areas where traditional ambulatory healthcare and the MHDS system interact, and workgroup members see the integration of these two networks as a way to facilitate interaction between these systems and improve care coordination for individuals served. For example, it will be beneficial to providers in Emergency Departments to be able to query a database for information about an individual who visits the Emergency Department experiencing a Mental Health crisis to see if they are already receiving Mental Health services. This will assist in providing more effective treatment and will also assist in getting the individual to appropriate follow up services. Workgroup members are interested in monitoring the development of the IHIN network and exploring the opportunity for these two systems to work together.

- **An organized, coordinated effort among all MHDS stakeholders should be in place to minimize the cost of operational/transactional systems now and in the future.**

Workgroup members realize the importance of having an efficient and effective data collection system. However, workgroup members also recognize and emphasize that the purpose of Redesign was to improve services across the state. Workgroup members do not want to lose this focus, and recommend that all stakeholders involved in the MHDS system should work to ensure that the costs associated with operational and transactional data systems be minimized to maintain system focus

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on providing services to consumers. Many factors that minimize the cost of operational and transactional systems have already been discussed in this report. Streamlining data collection efforts and minimizing duplication of data save both time and resources, and consistent data labeling throughout the data warehouse system will assist in this process.

IV. Limitations to Workgroup Recommendations

The type of centralized data repository described in this report assumes that all data is reported at the client level. However, not all information reported in the current MHDS system is reported on an individual client basis. Often times these are services that are funded from the Mental Health Block Grant (or other similar grants), and it includes services such as: crisis services, consultation, mental health education, jail diversion, sheriff costs for transportation, and mental health services provided in jail. Currently, entities report the data relevant to these services in their client-based IT systems, and tie all of the financial information to a “dummy” client. This allows their systems to track the overall service expenses, but does not allow this expense to be reported on an individual per client basis. Workgroup members acknowledge that financial reporting may not be the primary purpose of this type of data warehouse, however do want to acknowledge that there will be some loss of information regarding these types of services, if they are reported in this manner.

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Appendix A Workgroup Charge and Meeting Schedule



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Mental Health and Disability Services
Redesign

Service System Data & Statistical Information Integration Workgroup Charge

Source: Iowa Department of Human Services

Date: July 2, 2012

MISSION

To develop an integrated data and statistical information system for mental health, disability, and substance abuse services

GOALS

- The Workgroup shall make recommendations for establishing the specifications of electronic, integrated service and funding data, demographic, diagnostic, and statistical information system for all persons receiving publically funded mental health and disability services.
- The new system will:
 - Build on what currently exists.
 - Exchange data within existing systems.
 - Not cause undue burden on consumers or providers.
 - Not collect more data than what is used and use data that is collected.
 - Create a process to ensure data integrity.
 - Be forward thinking and flexible.
 - Determine who will report and define compliance measures.
 - Demonstrate that the public investment made is resulting in positive change.

MEMBERSHIP

*See attached.

TASKS

For an effective data and statistical information system to be realized, several tasks will need to be completed.

- Review current data collection tools, resources, reports, and types of data collected from current departments and providers.
- Conduct a gap analysis.
- Research other states' data collection and integration systems and best practices.

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- Identify federal and state requirements for data collection and output.
- Identify “points of pain”.
- Balance need for standardization with flexibility with how to accomplish the outcome.
- Determine how data will be communicated.
- Consider HIPAA requirements when determining data collected and outcome and performance measures.
- Establish maintenance management.
- Create a comprehensive list or map of what the integrated system will look like and what it will do.
- Create a list of priorities for developing and rolling out the system.
- Work with other groups to develop a set of guidelines for data collection and output.
- Create a recommendations report that includes the specifications for data collection, a timeline, and a budget.

REPORT DUE

December 14, 2012

TIMELINE

Schedule	Date	Task
Meeting 1: Iowa State Association of Counties, Des Moines	Friday, March 30, 2012; 11:00am-2:00pm	Achieve goals set forth in the agenda and charge.
Meeting 2: Polk Co. River Place, Des Moines	Tuesday, August 7, 2012; 10:00am-3:00pm	Achieve goals set forth in the agenda and charge.
Meeting 3: Polk Co. River Place, Des Moines	Wednesday, August 29, 2012; 10:00am-3:00pm	Achieve goals set forth in the agenda and charge.
Meeting 4: Polk Co. River Place, Des Moines	Wednesday, September 26, 2012; 10:00am-3:00pm	Achieve goals set forth in the agenda and charge.
Meeting 5: Polk Co. River Place, Des Moines	Wednesday, October 24, 2012; 10:00am-3:00pm	Achieve goals set forth in the agenda and charge.
Meeting 6: Conference Call	Tuesday, November 27, 2012	Workgroup review of draft report.
Final Report Due	Friday, December 14, 2012	Final report submitted to Governor and General Assembly.
Final Report Distribution	Friday, December 14, 2012	Final report emailed to Workgroup members and posted to Redesign website.

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Appendix B Workgroup Membership List

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Service System Data and Statistical Information Integration Workgroup

Chair -Shults, Rick	Department of Human Services-Division of Mental Health and Disability Services	Division Administrator
Co-Chair -Harlow, Robin	Iowa State Association of Counties (ISAC)	Technology Manager
Co-Chair -Stone, Kathy	Iowa Department of Public Health	Division Director
Dowell, Karen	Black Hawk County	Funding Coordinator
Duhn, Sue	Dickinson County	Privacy Officer
Eaton, Jill	Marshall County	Central Point of Coordination Administrator
Fontanini, Gina	Iowa State Association of Counties (ISAC)	
Gabbert, Kevin	Iowa Department of Public Health (IDPH)	Executive Officer 2 - Access to Recovery
Graves, Kris		Mental Health Consumer
Grush, John	Boone County	Central Point of Coordination Administrator
Holmes, Jody	Iowa Medicaid Enterprise (IME)	CORE Unit Manager/HIT Project Director
Kaestner, Cindy	Abbe Center for Community Mental Health	Vice President/Executive Director
Maguire, Lonnie	Shelby, Harrison & Monona Counties	Central Point of Coordination Administrator
Novak, Sue	Linn County	Budget Manager Director
Petersen, Dennis	Magellan of Iowa	Operations Director
Preuss, Eric	Iowa Department of Public Health (IDPH)	Executive Officer 2 - Iowa Plan
Sample, Joseph	Iowa Department on Aging	Aging and Disability Resource Center Director
Seehase, Susan	Exceptional Persons	Services Director
Walters-Crammond, Karen	Polk County Health Services	Program Planner for Budget
Watson, Sam	Iowa State Association of Counties (ISAC)	

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Appendix C **Data Warehouse Conceptual Framework & Outline**

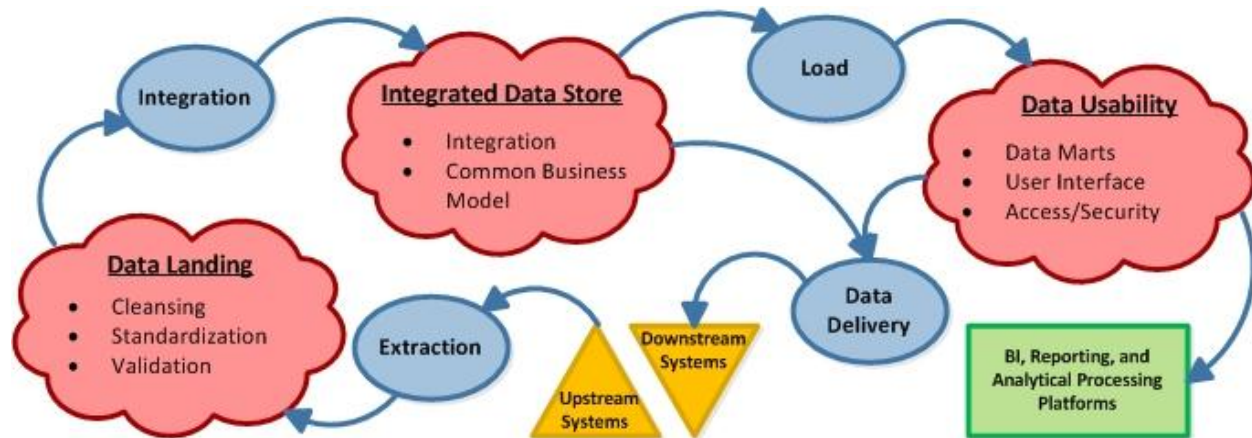
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Data Warehouse – Planning Broadly & Executing Modularly

Warehouse Environment Overview²

Figure 1: Depicts the *logical architecture* of the major functions and data flow through a data warehouse environment.



The “Cloud” shaped zones (or major stores of data) - Common to each zone the *staging area* is used to collect input and perform work in progress. The *publishing area* is used to make data available for downstream consumption. In order to reliably connect the red zones together it is important that there is a well-established protocol for what data can be consumed downstream and when this can occur. Separation of staging and publishing establishes this definition. Each of the three red zones is defined below:

- **Data Landing Zone** - Point of interface from external sources of data into the warehouse environment. This is also the place where data cleansing and standardization can be performed as well as validation of data elements for quality assurance.
- **Integrated Data Zone** - This is the point where the various sources are integrated into a common model that is organized around the enterprise business data model instead of the data model of each source system. *Creating a well formed integrated data model is the single most important piece of the data warehouse environment because this will serve as the foundation for how easy or hard it will be for the downstream decision support and analytical functions to be performed.*
- **Data Usability Zone** - This is the point of interface with end users. The data is available for access by business intelligence and reporting platforms in order to fulfill decision support and analytical functions.

The Oval Shaped Zones (or flow of data) - Represent the extract, transform, and load (ETL) processes that are responsible for moving data from one point to another and converting the

² This conceptual framework is based on the article: Meta Analytix. (2010). *Information Based Design- Next Generation Data Warehouses for Healthcare providers*. Jacksonville, FL: Majarwitz, J & Nair, K.

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data into the desired structure. *It is important to distinguish between duplication of data and replication of data.*

- Extraction - This addresses sourcing data from upstream systems. *The major emphasis is on acquiring the necessary source system data.* There can be processing to clean up, validate, and standardize data elements.
- Integration - This addresses significant transformation to combine the data from separate source systems into a common, integrated data model. *This is typically the most complex and performance sensitive processing within the data warehouse environment.*
- Loading - Since the data is already integrated into a common model the processing involved is fairly straightforward. However, there may be conversion of the model from a relatively normalized design (in the Integrated Data Source) to a dimensional design (in the Data Usability Zone)
- Delivery - This addresses being able to provide data extracts to downstream targets

The Integrated Data Model

Being able to plan to work globally and execute modularly is tied to these basic two observations regarding the integrated data model:

- 1) You do not need to have all of the data in the data warehouse for some of the data to be of use for decision support and analytics. Taking advantage of this observation allows for a project to be executed modularly.
- 2) As additional data is sourced in the data warehouse environment, it will relate to existing data already in the environment. Taking advantage of this observation results in a better data model, providing consistent quality, high performance, and low cost. This requires one to plan globally.

Figures 2, 3, and 4 below help to illustrate and expand on these observations.

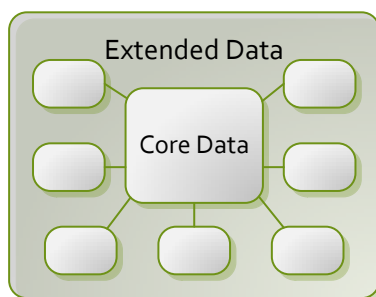


Figure 2: Core data and Extended Data Comprising an Integrated Data Model. *Core data* is the fundamental data that describes the business. This data is used prevalently for many decision support and analytic functions. *Extended data* is more specialized data that deeply describes a specific area of the business.

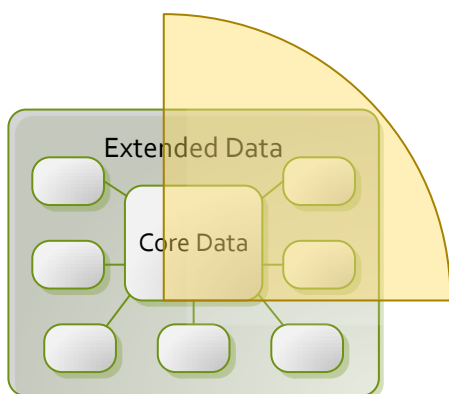


Figure 3: A “slice” of the integrated data model that describes a primary business function

PRELIMINARY DISCUSSION DRAFT

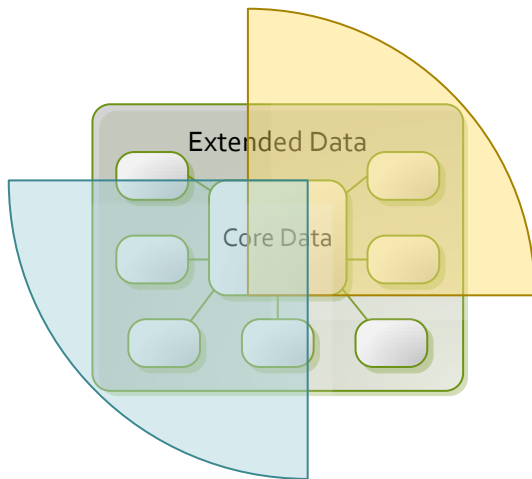


Figure 4: Data Groupings for Two Business Functions, Showing Their Overlap

Handling the overlap is crucial to the sustained success of the data warehouse environment. The integrated data model needs to keep a singular data model, meaning that there is only one definition for a business entity and attributes are in one and only one place. It is the strict observance of this practice that results in an overall integrated data model. By planning broadly across a number of business functions and the corresponding source systems, the work program can be

modularized and prioritized thereby allowing for incremental delivery of value based on the needs of the business.

It is important that the business function that is sourced first, establishes the common data into an integrated model so that it is available to the second business function which then only has to add the additional data from sources not yet extracted.